REBUTTAL TESTIMONY

OF

SCOTT PARKER
ON BEHALF OF

DOMINION ENERGY SOUTH CAROLINA, INC.

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Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH DOMINION ENERGY SOUTH CAROLINA, INC. ("DESC" OR "COMPANY").

A. My name is Scott Parker. My business address is 601 Old Taylor Road, Mail Code J37, Cayce, South Carolina 29033. I am employed by Dominion Energy South Carolina, Inc. ("DESC" or the "Company") where I am Manager of Transmission Planning.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND BUSINESS BACKGROUND.

A. I am a graduate of Clemson University with a Bachelor of Science degree in Electrical Engineering. I also hold a Master of Business Administration degree from the University of South Carolina. I am a registered Professional Engineer in the State of South Carolina.

I began working for the Company in 1990 as an engineer in Generation Planning. I was promoted to Manager of Operations Planning in 2012 and to my current position of Manager of Transmission Planning in 2018.

Q. ARE YOU A MEMBER OF ANY INDUSTRY COMMITTEES FOR SYSTEM RELIABILITY ASSESSMENT OR PLANNING?

A. Yes, I am currently a representative for DESC on the Southeastern Reliability Corporation ("SERC") Engineering Committee and the SERC Planning Coordination Subcommittee. I am the current chair of the Carolinas Transmission Coordination Agreement Power Flow Study Group. I am also a member of the Eastern Interconnection Planning Collaborative Technical Committee.

All of these committees are directly involved with assessing the current and future capabilities of the integrated transmission grid in North America, the Southeast, and the Carolinas.

Q. PLEASE SUMMARIZE YOUR DUTIES AS MANAGER OF TRANSMISSION PLANNING.

A. I am responsible for managing the engineers who prepare the planning and associated analyses of the DESC electric transmission system to ensure compliance with required transmission planning and reliability standards and criteria, as discussed below. It is our duty to ensure the safety, reliability, adequacy and cost effectiveness of the internal DESC transmission system as well as the interconnection transmission facilities with neighboring utilities.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes, I have.

Q. HAVE YOU REVIEWED THE DIRECT TESTIMONIES OF WITNESS ANTHONY SANDONATO, WITNESS LEAH WELLBORN, AND WITNESS PHILIP HAYET ON BEHALF OF THE OFFICE OF REGULATORY STAFF ("ORS")?

A. I have.

Q. HAVE YOU REVIEWED THE DIRECT TESTIMONIES OF WITNESS DEREK STENCLIK AND WITNESS JIM GREVATT ON BEHALF OF THE COASTAL CONSERVATION LEAGUE AND SOUTHERN ALLIANCE FOR CLEAN ENERGY ("CCL/SACE") AND SIERRA CLUB IN THIS PROCEEDING (COLLECTIVELY, THE "ENVIRONMENTAL INTERVENORS")?

A. I have.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to issues raised in the direct testimonies of ORS and CCL/SACE and Sierra Club regarding the transmission planning process for the potential early retirement and replacement of the Williams and Wateree coal units and issues related to the 2022 Transmission Impact Analysis ("TIA"). I also support Company Witness James Neely's testimony explaining why the suggestion that DESC should incorporate transmission planning analysis in the PLEXOS model he administers is inappropriate for DESC's system.

Q. DO YOU AGREE WITH WITNESS STENCLIK THAT WILLIAMS COULD BE REPLACED EARLIER THAN 2030 WITH A 100% BATTERY RESOURCE LOCATED AT THE WILLIAMS SITE?

A. No. The 2022 TIA, which he references in his testimony, did not support his assertion.

Q. PLEASE EXPLAIN.

A. The 2022 TIA evaluated the impact of three configurations of standalone battery storage located at Williams on the cost and construction schedule of transmission resources required to support Williams' retirement. At DESC's Resource Planning's request, my group modeled three configurations of battery resources with storage capacity sufficient to operate at either 100 MW, 200 MW or 300 MW for four hours. We conducted the analysis under the transmission reliability criteria that DESC uses to perform annual reliability assessments in compliance with the National Electric Reliability Corporation ("NERC") Reliability Standards. We used DESC's power flow model which is filed annually with FERC, is subject to NERC audit and incorporates power flows from and to other systems. The analysis did not consider the cost of battery resources, rather the analysis included only their effect on transmission costs and schedules associated with the Williams retirement.

Q. WHAT DID YOUR ANALYSIS ASSUME WOULD BE THE SOURCE OF ENERGY TO REPLACE THE ENERGY CURRENTLY PROVIDED BY WILLIAMS?

A. The analysis assumed a 757 MW resource would be interconnected at the Canadys site to provide energy to replace that provided by Williams. This energy will be needed to charge the battery resources and otherwise to support reliability in the southern part of the system. The scenario posited that the 757 MW resource would be in the form of simple cycle combustion peaking turbines and they served as a proxy for any dispatchable resource whose power could be delivered to the Canadys site.

Q. IN HIS PLEXOS ANALYSIS, WITNESS NEELY USED THE COST OF TRANSMISSION ASSOCIATED WITH COMBINED CYCLE CAPACITY LOCATED AT CANADYS AS A PROXY FOR THE COST OF TRANSMISSION TO SUPPORT THE REPLACEMENT OF WILLIAMS. IS THAT A REASONABLE PLANNING ASSUMPTION?

A. Yes, it is. That cost is \$309 million as estimated in the 2021 TIA. It is a cost for transmission to replace Williams that Witness Neely's modeling can apply equally to all replacement resources and is conservatively low.

Q. WHY DO YOU CONSIDER THIS ASSUMED COST TO BE CONSERVATIVELY LOW?

A. The assumed cost is conservatively low because it is relatively inexpensive to provide additional transmission capacity into Charleston from the Canadys site. The Canadys site is in close proximity to Charleston and the St. George Switching Station, and it has significant existing transmission assets connecting that site to Charleston area load centers. Specifically, two high-capacity 230 kV lines, each over 35 miles long, were built to the Canadys site when it was an active generation station and go directly from Canadys to substations feeding the Charleston peninsula and surrounding areas. In addition, the nearby St. George Switching Station also has two high-capacity 230 kV lines that connect to the Summerville substation which serves Summerville and surrounding areas. The transmission system projects associated with the Canadys combined-cycle scenario, on which the 2021 TIA calculated the \$309 million cost estimate, can be accomplished with minimal new right of way which reduces costs and the time needed to construct those upgrades. For those reasons, from a transmission standpoint Canadys is a low-cost location for siting generation to replace Williams.

Using the transmission costs for resources located at Canadys as the proxy for the transmission cost of other potential resources to replace Williams allows all replacement resources to benefit to some degree in the planning process from the cost advantages of the Canadys site.

The $309 million cost that the 2021 TIA estimated for transmission supporting Williams replacement capacity at Canadys is an estimate only and is subject to escalation. As options become more clearly defined, more specific transmission cost analyses will be prepared through future TIAs and interconnection studies. In fact, a 2023 TIA is forthcoming that will quantify the transmission cost and schedule to support a large combined cycle natural gas unit located at Canadys which DESC and Santee Cooper could construct as a joint project. But for planning purposes at this stage of the analysis, using the $309 million cost estimate as the cost that applies to all replacement scenarios is fair and appropriate.

Q. IN CONDUCTING YOUR ANALYSIS OF THE BENEFITS OF LOCATING BATTERY RESOURCES AT WILLIAMS, WHAT ASSUMPTIONS DID YOU MAKE CONCERNING SANTEE COOPER'S SYSTEM?

A. My group evaluated the impact of locating batteries at Williams under a best-case analysis (from DESC's transmission planning perspective) that assumed that Santee Cooper did not retire its Winyah coal generation units and a worst-case analysis that assumed it did.

Q. DO YOU HAVE AN OPINION ABOUT WHETHER THE BEST OR WORST CASE YOU ANALYZED IS MORE LIKELY?

A. I do not have any information about whether the best or worst case is more likely. Assessing the likelihood that Santee Cooper will retire the Winyah units early or not is beyond the scope of my analysis. I do note that Santee Cooper has publicly stated that it plans to retire Winyah by the end of 2030, and S.C. Code Ann. § 58-37-40 requires Santee Cooper in its IRP to "evaluate at least one resource portfolio, which will reflect the closure of the Winyah Generating Station by 2028."

Q. WHAT WERE THE RESULTS OF THE ANALYSIS?

A. Under the worst-case scenario, where Winyah is retired, the analysis found that locating 100 MW to 300 MW of battery capacity at Williams did not reduce the cost or schedule for the transmission upgrades required to support Williams retirement which were $331 million and 72 months under all three analyses. Under the best-case scenario, a 100 MW battery at Williams did not reduce the cost or schedule of the required transmission. A 200 MW battery reduced the needed transmission upgrades from $331 million to $221 million and the time to construct those upgrades from 72 months to 54 months in a best case scenario. But under the best-case scenario, there was no additional improvement in cost or schedule from increasing the battery resource from 200 MW to 300 MW which indicates that attempting to replace Williams with expensive and energy-limited battery storage would not be practical. Of course, a similar savings would be realized by locating additional thermal units at the site in place of battery.

Q. COULD CONSTRUCTING A JOINT RESOURCE AT CANADYS WITH SANTEE COOPER CHANGE THE COST ANALYSIS?

A. Yes. Constructing a joint resource at Canadys with Santee Cooper could change the cost analysis in a beneficial way, all other things being equal and not accounting for intervening inflation, because the transmission improvements that Santee Cooper would need to make could well reduce the cost of the transmission improvements DESC would need to pay for. The 2023 TIA will be based on studies conducted jointly with Santee Cooper and will identify any expected benefits.

Q. DO YOU AGREE WITH COMPANY WITNESSES NEELY'S AND WITNESS WALKER'S EXPLANATIONS IN THEIR REBUTTAL TESTIMONIES OF WHY BATTERY RESOURCES ARE NOT A FEASIBLE MEANS TO AVOID THE TRANSMISSION UPGRADES?

A. Yes. These explanations are correct from a transmission and grid reliability standpoint. Batteries are energy-limited resources that can only generate at prescribed levels for a fixed duration of time and must be taken off line to be recharged, at which point they represent a new large load in the Charleston load center. These characteristics limit the ability of batteries to support service in the Charleston area without significant transmission upgrades. That is because the Charleston area is constrained both in terms of transmission capacity and available generation, particularly when Williams is retired. This is often the case not just during peak periods, but during system maintenance periods in the spring and fall as well. In my 20 plus years in the system control room at DESC I have seen numerous cases where proposed transmission maintenance work could not be conducted when Williams station was off-line due to the constrained nature of that area of the system. When maintenance is needed in the Charleston area, it must be conducted with Williams off-line, and system operators often experience operational challenges including running generators out of economic order to resolve the transmission constraints at these times. For these reasons, significant transmission upgrades cannot be avoided by replacing Williams with 100% battery resources.

Q. THE ENVIRONMENTAL INTERVENORS SUGGEST THAT DESC SHOULD MODEL THE TRANSMISSION SYSTEM IN PLEXOS. IS IT APPROPRIATE TO MODEL THE TRANSMISSION SYSTEM IN PLEXOS?

A. I do not think modeling the transmission system in PLEXOS would be practical or would produce more meaningful results than the current approach.

Q. COULD YOU EXPLAIN WHY?

A. Yes. Transmission Planning's power flow models contain detailed information about every major transmission asset and interconnection on the system. These models are updated continuously as new loads and resources are added to the system and that updating is a major component of the work my group performs. These models take into account power flows into, out of and through adjoining systems. They are coordinated with interconnected systems. That aspect of the models is also updated regularly to ensure that the models accurately represent the current status of expected power flows from interconnected utilities.

Q. HOW DOES DESC'S SYSTEM INTERACTION WITH SANTEE COOPER'S INFLUENCE THE COMPLEXITY OF MODELING DESC'S TRANSMISSION SYSTEM?

A. For historical and geographical reasons, DESC's Balancing Area and Santee Cooper's are closely interconnected. Power routinely flows from our system to theirs and from theirs to ours and that has a major impact on our transmission planning. There are 19 interconnections between our two transmission systems embedded throughout our service territory compared to three interconnections with Duke Progress, four with Duke Carolinas and four with the Southern Companies. It requires a very complex power flow model to capture the interactions with Santee Cooper that must be taken into account in modeling generation planning decisions on our system. An enmeshed system like this cannot be modeled as a simple load pocket with a handful of transmission lines providing the majority of the power flows into and out of the load pocket as might be the case in other circumstances. There is very little that is simple about our transmission system and that fact is particularly important when considering transmission issues related to Charleston and Williams.

Q. WHAT CHALLENGES DO YOU SEE IN USING PLEXOS TO MODEL TRANSMISSION SYSTEM?

A. Attempting to accurately model this part of the DESC and neighboring transmission systems would require the PLEXOS model to somehow incorporate a tremendous amount of transmission complexity. From what I understand from Witness Neely about PLEXOS, it would take extensive simplifying assumptions for PLEXOS to be able to model DESC's transmission system. While PLEXOS has capability to include some transmission features, it is not a power flow model and as I understand it would be difficult to configure it to capture the level of detail required for effectively assessing the transmission impacts of generation planning decisions on a system like ours. Given the simplifications that Witness Neely indicates would be required, I am concerned that using the PLEXOS model for transmission could be misleading, and potentially could set up conflicts between our modeling and generation planning's which would be confusing and unfortunate.

Ultimately Transmission Planning will have to identify the transmission improvements required to maintain the reliability of the DESC system using the power flow models and techniques required under NERC Reliability Standards and the FERC Interconnection study process. Therefore, the Transmnission Planning's power flow models ares the appropriate tool to determine transmission needs for generation planning purposes.

For these reasons, I agree with Witness Neely that the best approach to transmission modeling is to maintain the current division of responsibility between generation planning and transmission planning where each group uses the models designed and calibrated for its particular purposes and the two groups use each other's results in refining and completing their analyses.

Q. WITNESS STENCLIK MAKES A SUGGESTION CONCERNING NODAL MODELING. HOW DO YOU RESPOND?

A. Nodal modeling requires the kind of simplification of power flow modeling that Witness Neely and I have discussed and is inappropriate for the reasons already stated. More to the point, power flow modeling represents the transmission system at a much more granular level than nodal modeling under PLEXOS or a similar generation planning model. In Transmission Planning's power flow model, every major transmission line and transformer is modeled as being connected to a specific individual node, which is the most accurate way to model transmission systems. This is also the level of accuracy needed for effective transmission planning and is the level of modeling required under DESC's NERC and FERC reliability commitments.

Q. HOW DO YOU RESPOND TO WITNESS STENCLIK'S SUGGESTION THAT DESC SHOULD "EVALUATE INTERREGIONAL TRANSMISSION AND/OR REGIONAL MARKET OPPORTUNITIES AS A WAY TO MITIGATE RELIABILITY RISK AND REDUCE COST"? (P. 81)

A. We do evaluate those opportunities regularly. DESC's transmission system directly interconnects with the transmission systems covering Mississippi, Alabama, Georgia, South Carolina and North Carolina and is one system removed from PJM, MISO and TVA, which cover much of the upper South, the Middle Atlantic States and the Mid-West. DESC has extensive agreements and protocols in place for reliability support from neighboring utilities and in fact receives such support when it is needed and is available. As Company Witness Nick Wintermantel testifies on direct, without such support, DESC planning reserve margin would increase from 20.1% to approximately 43%.

But there are limiting factors concerning this support as well, and it was not available in recent winter emergencies. The primary limiting factor is that each utility builds both transmission and generation assets primarily to serve its customer loads.

In the 2021 TIA, DESC analyzed the transmission investment that would be required to access off-system power to replace Wateree and Williams, and meet other demands from customers, and found that the required upgrades to interties and other transmission assets on DESC's side of the interconnection were cost prohibitive. We did not analyze the cost for the utilities on the other side of the interties, but those costs could also be significant and would add to the impracticality of relying on regional markets to meet these needs.

The 2021 TIA analysis was performed assuming that there was additional capacity and energy to be purchased from interconnected utilities. But that may not be the case. Like DESC, its neighboring utilities plan their generation systems to meet load, but not to overbuild, and in times of extreme weather, we have found that they have no idle generation capacity to provide their neighbors but are engaged in curtailments and load shedding as well.

Further, interregional transfers and regional market opportunities won't change the need for significant transmission upgrades prompted by the retirement of Williams. This is a rapidly growing part of South Carolina and without Williams there is a dearth of generation in the area which will necessitate major transmission investments to support it regardless of interregional transfers and regional market opportunities.

More generally, the suggestion that interregional transmission or regional market opportunities are simple solutions for reliability issues requires careful evaluation. Expanding interregional transmission or regional market opportunities will require large investments in transmission and generation assets to create or expand opportunities for additional power to be bought or sold. The analysis in the 2021 TIA shows that in the case of retiring both Wateree and Williams, the transmission investments required for off-system supply were significantly more than the cost of providing the required replacement capacity locally.

There is a political and regulatory aspect to interregional planning as well. It is becoming more difficult to site new transmission lines, and it may be particularly hard to do so where the need is regional not local.

DESC will continue to participate in interregional transmission planning, as it does now, and will continue to evaluate the potential for relying on market power to meet its capacity and energy needs, as it did in the 2021

TIA. However, the practical and cost limitations to interregional supply will always be a factor that must be considered.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.